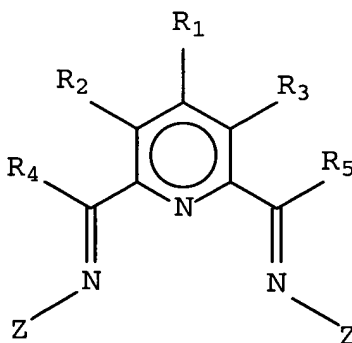


In the Claims:

Please amend the claims as follows:

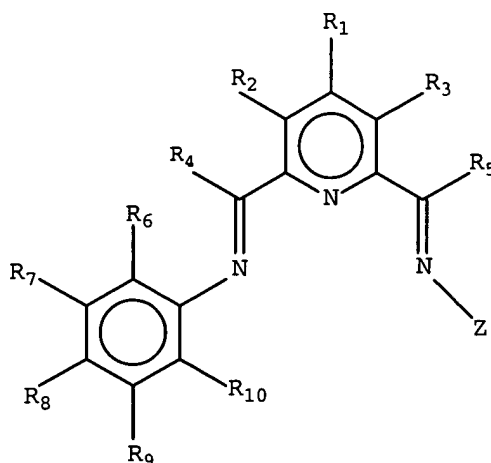
1. (Currently amended) A process for production of higher linear alpha olefins and/or alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine  $\text{MX}_a$  complexes and/or one or more  $[\text{bis-aryliminepyridine MY}_p\text{.L}_b^+][\text{NC}^-]_q$  complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -co-ordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of ~~less than 2.5 MPa~~ from about 0.1 MPa to about 1.6 MPa and a temperature of from about -100°C to about 300°C.

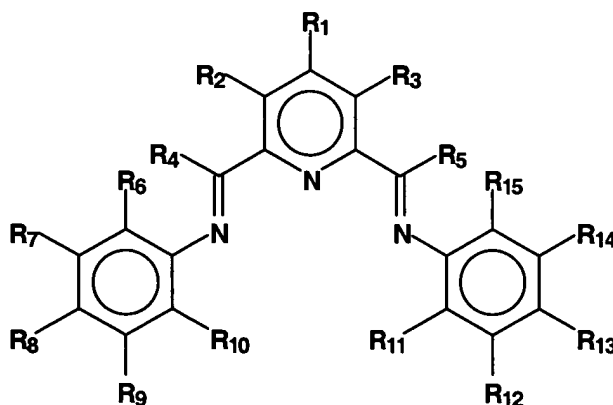
2. (Original) The process of Claim 1 wherein said ligand is of the formula,



(II)

wherein  $R_1$ - $R_{10}$  are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of  $R_1$ - $R_3$ ,  $R_6$ - $R_{10}$  vicinal to one another taken together may form a ring;  $R_6$  may be taken together with  $R_4$  to form a ring;  $R_{10}$  may be taken together with  $R_4$  to form a ring;  $Z$  is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -co-ordinated to the metal.

3. (Original) The process of Claim 1 wherein said ligand is of the formula,



(III)

wherein  $R_1$ - $R_5$ ,  $R_7$ - $R_9$  and  $R_{12}$ - $R_{14}$  are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of  $R_1$ - $R_3$ ,  $R_7$ - $R_9$  and  $R_{12}$ - $R_{14}$  vicinal to one another taken together may form a ring;  $R_6$  is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with  $R_7$  or  $R_4$  to form a ring;  $R_{10}$  is hydrogen, optionally

substituted hydrocarbyl, an inert functional group, or taken together with R<sub>9</sub> or R<sub>4</sub> to form a ring; R<sub>11</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>5</sub> or R<sub>12</sub> to form a ring; and R<sub>15</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>5</sub> or R<sub>14</sub> to form a ring.

4. (Original) The process of Claim 3 wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub> is a primary carbon group, a secondary carbon group or a tertiary carbon group; and provided that:

when R<sub>6</sub> is a primary carbon group none, one or two of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are primary carbon groups, and the remainder of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen;

when R<sub>6</sub> is a secondary carbon group none or one of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> is a primary carbon group or a secondary carbon group and the remainder of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen;

when R<sub>6</sub> is a tertiary carbon group all of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen; and

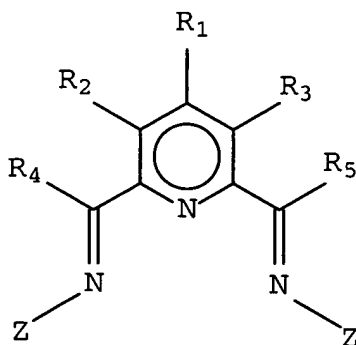
any two of R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> vicinal to one another, taken together may form a ring.

5. (Original) The process of Claim 3 wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>7</sub> or R<sub>4</sub> to form a ring; R<sub>10</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>9</sub> or R<sub>4</sub> to form a ring; R<sub>11</sub> and R<sub>15</sub> are, independently, hydrogen or an inert functional group.

6. (Original) The process of Claim 3 wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub>, R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are identical and are each selected from fluorine or chlorine.

7. (Currently amended) A process for producing higher linear alpha olefins and/or alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX<sub>a</sub> complexes and/or one or more [bis-aryliminepyridine MY<sub>p</sub>.L<sub>b</sub><sup>+</sup>][NC<sup>-</sup>]<sub>q</sub> complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

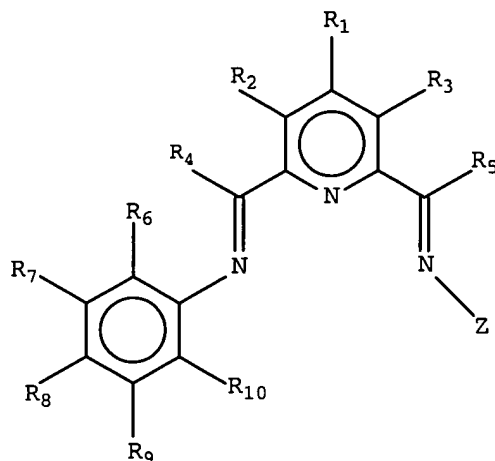
wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -co-ordinated to the metal; said co-oligomerizing being carried out under conditions comprising an ethylene pressure of ~~less than 2.5 MPa~~ from about 0.1 MPa to about 1.6 MPa and a temperature of about -100°C to about 300°C, wherein alpha olefin co-monomer is present in a concentration of greater than 1 mol.l<sup>-1</sup>.

Claims 8-12 (Canceled).

Claims 13-16 (Withdrawn)

Please amend the following new claims which were submitted in the previous paper:

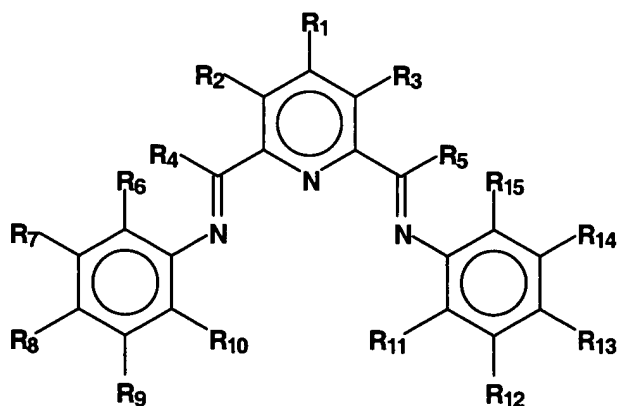
~~4317~~. (Currently Amended) The process of claim 7 wherein said ligand is of the formula,



(II)

wherein  $R_1$ - $R_{10}$  are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of  $R_1$ - $R_3$ ,  $R_6$ - $R_{10}$  vicinal to one another taken together may form a ring;  $R_6$  may be taken together with  $R_4$  to form a ring;  $R_{10}$  may be taken together with  $R_4$  to form a ring;  $Z$  is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -co-ordinated to the metal.

1418. (Currently Amended) The process of claim 7 wherein said ligand is of the formula,



(III)

wherein  $R_1$ - $R_5$ ,  $R_7$ - $R_9$  and  $R_{12}$ - $R_{14}$  are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of  $R_1$ - $R_3$ ,  $R_7$ - $R_9$  and  $R_{12}$ - $R_{14}$  vicinal to one another taken together may form a ring;  $R_6$  is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with  $R_7$  or  $R_4$  to form a ring;  $R_{10}$

is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>9</sub> or R<sub>4</sub> to form a ring; R<sub>11</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>5</sub> or R<sub>12</sub> to form a ring; and R<sub>15</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>5</sub> or R<sub>14</sub> to form a ring.

~~4519~~. (Currently Amended) The process of claim ~~4418~~ wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub> is a primary carbon group, a secondary carbon group or a tertiary carbon group; and provided that:

when R<sub>6</sub> is a primary carbon group none, one or two of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are primary carbon groups, and the remainder of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen;

when R<sub>6</sub> is a secondary carbon group none or one of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> is a primary carbon group or a secondary carbon group and the remainder of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen;

when R<sub>6</sub> is a tertiary carbon group all of R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are hydrogen; and

any two of R<sub>6</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub> and R<sub>15</sub> vicinal to one another, taken together may form a ring.

~~4620~~. (Currently Amended) The process of claim ~~4418~~ wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>7</sub> or R<sub>4</sub> to form a ring; R<sub>10</sub> is hydrogen, optionally substituted hydrocarbyl, an inert functional group, or taken together with R<sub>9</sub> or R<sub>4</sub> to form a ring; R<sub>11</sub> and R<sub>15</sub> are, independently, hydrogen or an inert functional group.

~~4721~~. (Currently Amended) The process of claim ~~4418~~ wherein R<sub>1</sub>-R<sub>5</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub>, R<sub>7</sub>-R<sub>9</sub> and R<sub>12</sub>-R<sub>14</sub> vicinal to one another taken together may form a ring; R<sub>6</sub>, R<sub>10</sub>, R<sub>11</sub> and R<sub>15</sub> are identical and are each selected from fluorine or chlorine.

Cancel claim 22 which was incorrectly numbered 18.

~~4923~~. (Currently Amended) The process of claim 1 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

Cancel claim 24 which was incorrectly numbered 20.

~~2425~~. (Currently Amended) The process of claim 7 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

2226. (Currently Amended) The process of claim 7 wherein said conditions comprise a temperature of from about 50°C to about 150°C.

Cancel claim 27 which was incorrectly numbered 23.

2428. (Currently Amended) The process of claim ~~13~~17 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

Cancel claim 29 which was incorrectly numbered 25.

2630. (Currently Amended) The process of claim ~~14~~18 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

Cancel claim 31 which was incorrectly numbered 27.

2832. (Currently Amended) The process of claim ~~15~~19 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

Cancel claim 33 which was incorrectly numbered 29.

3034. (Currently Amended) The process of claim ~~16~~20 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

Cancel claim 35 which was incorrectly numbered 31.

3236. (Currently Amended) The process of claim ~~17~~21 wherein said conditions comprise a temperature of from about 0°C to about 200°C.

3337. (Currently Amended) The process of claim ~~17~~21 wherein said conditions comprise a temperature of from about 50°C to about 150°C.

Cancel claims 38-49 which were incorrectly numbered 34-45.

4650. (Currently Amended) The process of claim 1 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 mol.l<sup>-1</sup>.

4751. (Currently Amended) The process of claim 1 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 mol.l<sup>-1</sup>.

4852. (Currently Amended) The process of claim 2 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 mol.l<sup>-1</sup>.

4953. (Currently Amended) The process of claim 2 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 mol.l<sup>-1</sup>.

5054. (Currently Amended) The process of claim 3 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 mol.l<sup>-1</sup>.

5155. (Currently Amended) The process of claim 3 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 mol.l<sup>-1</sup>.

5256. (Currently Amended) The process of claim 4 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 mol.l<sup>-1</sup>.

~~5357~~. (Currently Amended) The process of claim 4 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 mol.l<sup>-1</sup>.

~~5458~~. (Currently Amended) The process of claim 5 wherein said alpha olefin co-monomer is present at a concentration of greater than 2.5 mol.l<sup>-1</sup>.

~~5559~~. (Currently Amended) The process of claim 5 wherein said alpha olefin co-monomer is present at a concentration of greater than 5 mol.l<sup>-1</sup>.

~~5660~~. (Currently Amended) The process of claim 1 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~5761~~. (Currently Amended) The process of claim 7 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~5862~~. (Currently Amended) The process of claim ~~1317~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~5963~~. (Currently Amended) The process of claim ~~1418~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~6064~~. (Currently Amended) The process of claim ~~1519~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~6165~~. (Currently Amended) The process of claim ~~1620~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~6266~~. (Currently Amended) The process of claim ~~1721~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~6367~~. (Currently Amended) The process of claim ~~2024~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

~~6468~~. (Currently Amended) The process of claim ~~2327~~ wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

6569. (Currently Amended) The process of claim 4650 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

6670. (Currently Amended) The process of claim 4751 wherein said conditions comprise a temperature and pressure effective to yield a product slate with a K-factor of from about 0.40 to about 0.90.

6771. (Currently Amended) The process of claim 1 wherein said conditions comprise an inert solvent.

6872. (Currently Amended) The process of claim 7 wherein said conditions comprise an inert solvent.

6973. (Currently Amended) The process of claim 4650 wherein said conditions comprise an inert solvent.

7074. (Currently Amended) The process of claim 4751 wherein said conditions comprise an inert solvent.

7175. (Currently Amended) The process of claim 6569 wherein said conditions comprise an inert solvent.

7276. (Currently Amended) The process of claim 6670 wherein said conditions comprise an inert solvent.

7377. (Currently Amended) The process of claim 6771 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

7478. (Currently Amended) The process of claim 6872 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

7579. (Currently Amended) The process of claim 6973 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

7680. (Currently Amended) The process of claim 7074 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

7781. (Currently Amended) The process of claim 7175 wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

**7882.** (Currently Amended) The process of claim **7276** wherein said inert solvent is selected from the group consisting of alkanes, alkenes, cycloalkanes, and aromatic hydrocarbons.

**7983.** (Currently Amended) The process of claim **6771** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

**8084.** (Currently Amended) The process of claim **6872** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

**8185.** (Currently Amended) The process of claim **6973** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

**8286.** (Currently Amended) The process of claim **7074** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

**8387.** (Currently Amended) The process of claim **7175** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

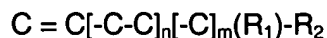
**8488.** (Currently Amended) The process of claim **7276** wherein said inert solvent is selected from the group consisting of hexane, isooctane, benzene, toluene, and xylene.

**8589.** (Currently Amended) The process of claim 1 wherein said conditions comprise the absence of air and moisture.

**8690.** (Currently Amended) The process of claim 7 wherein said conditions comprise the absence of air and moisture.

Please add the following new claims:

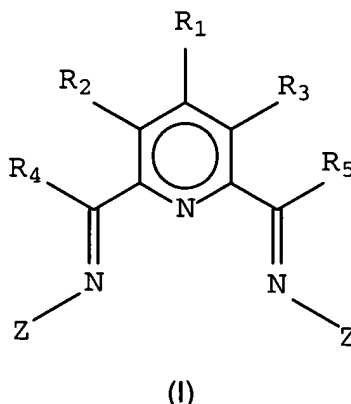
**91.** (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms and having the general structure:



wherein  $R_1$  is a methyl group;  $n = 0, 1, 2$ , etc.;  $m = 1$ ; and  $R_2$  is an optionally substituted hydrocarbyl, said process comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine  $MX_a$

complexes and/or one or more [bis-aryliminepyridine  $MY_p.L_b^+][NC^-]_q$  complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



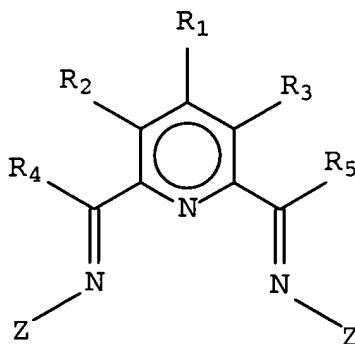
wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -coordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa.

92. (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms and having the general structure:



wherein R<sub>1</sub> is an ethyl group; n = 0, 1, 2, etc.; and R<sub>2</sub> is an optionally substituted hydrocarbyl, said process comprising:

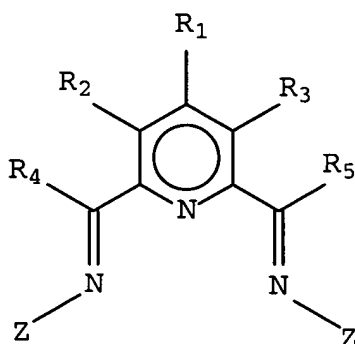
co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX<sub>a</sub> complexes and/or one or more [bis-aryliminepyridine  $MY_p.L_b^+][NC^-]_q$  complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -coordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure from about 0.1 MPa to about 1.6 MPa.

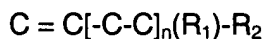
93. (New) A process for producing higher linear alpha olefins and/or alkyl-branched alpha olefins having a chain length of from 4 to 100 carbon atoms comprising: co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX<sub>a</sub> complexes and/or one or more [bis-aryliminepyridine MY<sub>p</sub>.L<sub>b</sub><sup>+</sup>][NC<sup>-</sup>]<sub>q</sub> complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

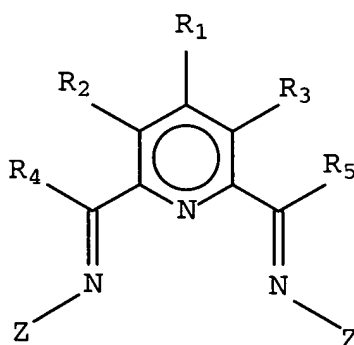
wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -co-ordinated to the metal; said co-oligomerizing being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa, wherein alpha olefin co-monomer is present in a concentration of greater than 1 mol.l<sup>-1</sup>.

94. (New) A process for production of higher alkyl-branched alpha olefins having a chain length of from 1 to 100 carbon atoms and having the general structure:



wherein R<sub>1</sub> is an ethyl group; n = 0, 1, 2, etc.; and R<sub>2</sub> is an optionally substituted hydrocarbyl, said process comprising:

co-oligomerising one or more alpha olefins other than ethylene with ethylene in the presence of a metal catalyst system employing one or more bis-aryliminepyridine MX<sub>a</sub> complexes and/or one or more [bis-aryliminepyridine MY<sub>p</sub>.L<sub>b</sub><sup>+</sup>][NC<sup>-</sup>]<sub>q</sub> complexes, said bis-aryliminepyridine complexes comprising a ligand of the formula,



(I)

wherein M is a metal atom selected from Fe or Co; a is 2 or 3; X is halide, optionally substituted hydrocarbyl, alkoxide, amide, or hydride; Y is a ligand which may insert an olefin; NC<sup>-</sup> is a non-coordinating anion; p+q is 2 or 3, matching the formal oxidation of said metal atom; L is a neutral Lewis donor molecule; b = 0, 1, or 2; R<sub>1</sub>-R<sub>5</sub> are each, independently, hydrogen, optionally

substituted hydrocarbyl, an inert functional group, or any two of R<sub>1</sub>-R<sub>3</sub> vicinal to one another taken together may form a ring; each Z, which may be identical or different, is an optionally substituted aromatic hydrocarbon ring; an optionally substituted polyaromatic hydrocarbon moiety; an optionally substituted heterohydrocarbyl moiety; or an optionally substituted aromatic hydrocarbon ring in combination with a metal, said optionally substituted aromatic hydrocarbon ring being  $\pi$ -coordinated to the metal; said co-oligomerising being carried out under conditions comprising an ethylene pressure of from about 0.1 MPa to about 1.6 MPa.